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A LIST OF REFERENCE BOOKS AND MAGAZINES FOR TEACHERS OF MATHEMATICS

By W. D. REEVE
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I. Books of a general pedagogical nature:

1. Judd, C. H., *The Psychology of High School Subjects.* Ginn and Co.

2. Parker, S. C., *Methods of Teaching in High Schools.* Ginn and Co.

These two books are the best of their kind available and are extremely interesting and helpful. Every teacher of high school mathematics should read them.

II. Books on the teaching of mathematics:

1. Branford, B., *A Study of Mathematical Education.* Clarendon Press. This is an exceedingly valuable book for both the elementary and the high school teacher.

2. Carson, G. St. L., *Mathematical Education.* Ginn and Co.

3. Evans, G. W., *The Teaching of High School Mathematics.* Houghton Mifflin Co.

4. Nunn, T. P., *The Teaching of Algebra, Including Trigonometry.* Longmans, Green and Co.

This book of Nunn's has two companion volumes which are very helpful. They are *Exercises in Algébra, Including Trigonometry,* Part I and Part II.

5. Perry, John, *Report of the British Association at Glasgow,* 1901. The Macmillan Co., 1901. (Out of print.)

6. Safford, T. H., *Mathematical Teaching.* D. C. Heath and Co.

7. Schultze, A., *The Teaching of Mathematics in Secondary Schools.* The Macmillan Co.

8. Smith, D. E., *The Teaching of Elementary Mathematics.* The Macmillan Co.

9. Smith, D. E., *The Teaching of Geometry.* Ginn and Co.

10. Young, J. W. A., *The Teaching of Mathematics.* Long-

11. Young, J. W. A., *The Teaching of Mathematics in Prussia.* Longmans, Green and Co.

III. Books relating to mathematical topics intended to improve the teacher of mathematics.

1. Chrystâl, George, *Algebra,* 2 vols. A. and C. Black.
2. Conant, A., *The Number Concept.* The Macmillan Co.
3. De Morgan, Augustus, *Study and Difficulties of Mathematics.* Open Court Publishing Co., 1910.
4. Fine, H. B., *College Algebra.* Ginn and Co.
5. Fine, H. B., *The Number System of Algebra.* D. C. Heath and Co., 1901.
6. Heath, Thomas, *The Thirteen Books of Euclid.* Cambridge Press.
7. Hilbert, David, *The Foundations of Geometry.* Open Court Publishing Co., 1910.
8. Keyser, Cassius J., *The Human Worth of Rigorous Thinking.* Columbia University Press.
9. Klein, Felix, *Famous Problems in Elementary Geometry.* Ginn and Co.
10. Lagrange, Joseph, *Lectures on Elementary Mathematics.* Open Court Publishing Co.
11. Laisant, C. A., *Initiation Mathematique.* This book is in French but is easy reading and has a refreshing outlook on mathematics. It has a subtitle "A Work Entirely Disconnected with Any Program and Dedicated to the Friends of Children."
12. Manning, H. P., *Non-Euclidean Geometry.* Ginn and Co.
13. Manning, H. P., *Geometry of Four Dimensions.* The Macmillan Co.
14. Manning, H. P., *Fourth Dimension Simply Explained.* Munn and Co.
15. Manning, H. P., *Irrational Numbers and Their Representation by Sequences and Series.* Wiley and Sons.
16. Poincaire, Henri, *Science and Hypothesis.* Science Press.
17. Russell, Bertrand, *Essay on the Foundations of Geometry.* Cambridge Press. (Out of print.)
18. Slosson, Edward, *Easy Lessons in Einstein.* Harcourt, Brace and Co.
19. Smith, D. E., and Karpinski, *The Hindu-Arabic Numerals.*
20. Whithead, A. N., *Introduction to Mathematics.* Henry Holt and Co.

21. Withers, J. W., *Euclid's Parallel Postulate.* Open Court Publishing Co.

22. Young, J. W., *Fundamental Concepts of Algebra and Geometry.* Macmillan and Co.

23. Young, J. W. A., *Monographs on Topics and Elementary Mathematics Relevant to the Elementary Field.*

IV. Books containing recreational material.

1. Abbot, *Flatland.* Little, Brown and Co. (Out of print.)

2. Ball, W. R., *Mathematical Recreations and Problems.* Macmillan Co.

3. Cheever, E. J., *The King of Calculators.* E. J. Cheever, Little Rock, Ark.

4. De Morgan, Augustus, *Budget of Paradoxes.* Open Court Pub. Co.

5. Jones, S. I., *Mathematical Wrinkles.* S. I. Jones, Nashville.

6. Leacock, Stephen, *Literary Lapses.* John Lane, N. Y.

7. Licks, H. E., *Recreations in Mathematics.* D. Van Nostrand Co., N. Y.

8. Manning, H. P., *Fourth Dimension.* Munn and Co.

9. Perry, John, *Spinning Tops.*

10. Schubert, Hermann, *Mathematical Essays.* Open Court Pub. Co.

11. Sykes, Mabel, *Source Book for Geometry.* Allyn and Bacon.

12. Thompson, Sylvanus, *Calculus Made Easy.* Macmillan Co.

13. White, W. F., *A Scrap-Book of Elementary Mathematics.* Open Court Publishing Co., 1910.

V. Books of a Historical Nature.

1. Allman, George J., *Greek Geometry from Thales to Euclid.* Longmans, Green and Co.

Macmillan Co.

3. Cajori, Florian, *A History of Mathematics.* The Macmillan Co.

4. Ball, W. R., *A Short History of Mathematics.* The Macmillan Co.

5. Fink, Karl, *A Brief History of Mathematics.* Open Court Pub. Co.

6. Gow, James, *A Short History of Greek Mathematics.* Cambridge Press.

7. Jacobs, Hermann, *The Seven-Tellers.* Hermann Von Jacobs, Berlin.

8. Mach, Ernst, *Science of Mechanics.* Open Court Publishing Co. (Reads like a novel and will keep the teacher in wide-awake touch with the mathematics work as it connects with physics.)

9. Stamper, A. W., *A History of the Teaching of Elementary Geometry.* Teachers' College, Columbia University, N. Y.

VI. Books Available as Texts.

A representative selection from all of the standard older texts and the modern texts on mathematics should be in the teacher's library and he should be able to choose from this list texts that would suit his purpose.

For a complete list of such books, see the Report of the Committee of Bibliography, p. 31, THE MATHEMATICS TEACHER, September, 1915, Vol. 8, No. 1.

VII. Magazines.

1. Of a Mathematical Nature.

a. The Mathematics Teacher, 71 South Broadway, Yonkers, N. Y.

This is the official organ of the National Council of Mathematics Teachers and is the only journal dealing entirely with mathematics in the secondary school. It contains material that will be helpful to mathematics teachers and every mathematics teacher should take it.

b. The American Mathematical Monthly. Treasurer, W. D. Cairns, Oberlin, Ohio.

This magazine deals chiefly with mathematics foreign to the secondary school field, but it is a good thing for the teacher below the college and university to make it the means of helping him in an attempt to do advanced work.

c. School Science and Mathematics. Mount Morris, Ill.

Though not of a strictly mathematical nature, this journal which is the official organ of the Central Association of Science and Mathematics Teachers contains some very stimulating articles for high school teachers of mathematics and it keeps him in closer touch with the allied sciences.

d. Technical magazines.

1. *Scientific American.* Munn and Co., N. Y.
2. *Scientific American Supplement.* Munn and Co.

e. Every teacher who can read either French or German should try to read at least one journal in either of these two languages.

2. Of a General Nature.

a. School Review. University of Chicago Press.

b. School and Society. Science Press, Garrison, N. Y.

These two magazines are two of the most stimulating and helpful sources of information for high school teachers.

DISCUSSION

A Few Lessons in Calculus for High Schools. The National Committee on Mathematical Requirements has stated that some work in calculus could well be taken in high school. As the idea appealed to us, we decided to have such a course here—a very short course, about twenty lessons.

The next thing was to find a suitable textbook, and here arose a serious difficulty. Almost all the American textbooks were written from a college point of view. They were too heavy. Certain English books came much nearer the desired field. As none of these was entirely satisfactory, we decided to arrange our own course.

We made the aim to give the pupil an acquaintance with a few of the simplest applications of calculus. For content we limited the field to the so-called practical problems, leaving out the more abstract work. And as differentiation and integration have many forms we omitted all work with logarithms and trigonometric functions of angles. The three main topics selected for problems were, Variable Rates of Motion, Maxima and Minima, and Finding Areas and Volumes. About twenty-five easy problems were collected for each group, samples of which are given later. Then enough theory with exercises was supplied to prepare for the problems. The drill exercises to a large extent were taken from the problem work. Differentials included the coefficient, the constant term, the sum, the product,